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ABSTRACT

All 437 census occupational titles were assigned scores from the following five systems for describing occupations: (1) Holland's (1973) occupational typology; (2) an occupational prestige scale; (3) an occupational self-direction scale; (4) the "Dictionary of Occupational Titles"; and (5) the Census Bureau classification. Occupational reinforcer pattern scores (measures of reinforcer characteristics of work environments) from the Minnesota Work Adjustment Project were also available for 320 of the titles. Comparisons of the classifications indicate that Holland's occupational typology has considerable validity for describing work activities, general training requirements, and rewards, particularly when it is supplemented by a measure of occupational level. Results also indicate that Holland's theory and future tests of it should take more account of level differences among occupations and specify more clearly the particular domains of job characteristics to which they do and do not apply. (Data tables are appended.) (Author/BM)

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THE CONSTRUCT VALIDITY OF HOLLAND'S OCCUPATIONAL CLASSIFICATION IN TERMS OF PRESTIGE, CENSUS, DEPARTMENT OF LABOR AND OTHER CLASSIFICATION SYSTEMS

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Introductory Statement

The Center for Social Organization of Schools has two primary objectives: to develop a scientific knowledge of how schools affect their students, and to use this knowledge to develop better school practices and organization.

The Center works through four programs to achieve its objectives. The Policy Studies in School Desegregation program applies the basic theories of social organization of schools to study the internal conditions of desegregated schools, the feasibility of alternative desegregation policies, and the interrelation of school desegregation with other equity issues such as housing and job desegregation. The School Organization program is currently concerned with authority-control structures, task structures, reward systems, and peer group processes in schools. It has produced a large-scale study of the effects of open schools, has developed Student Team Learning Instructional processes for teaching various subjects in elementary and secondary schools, and has produced a computerized system for school-wide attendance monitoring. The School Process and Career Development program is studying transitions from high school to post secondary institutions and the role of schooling in the development of career plans and the actualization of labor market outcomes. The Studies in Delinquency and School Environments program is examining the interaction of school environments, school experiences, and individual characteristics in relation to in-school and later-life delinquency.

This report, prepared as part of the School Process and Career Development program, examines the construct validity of Holland's Occupational Classification by comparing the classification with other major classifications of occupations.

The Construct Validity of Holland's Occupational Classification in Terms of Prestige, Census, Department of Labor, and other Classification Systems

Abstract

All 437 detailed census occupational titles were assigned scores from five systems for describing occupations: Holland's (1973) occupational typology, an occupational prestige scale, an occupational self-direction scale, the Dictionary of Occupational Titles, and the Census Bureau classification. Occupational reinforcer pattern scores from the Minnesota Work Adjustment Project were also available for 120 of the titles. Comparisons of the classifications indicate the Holland's occupational typology has considerable validity for describing work activities, general training requirements, and rewards, particularly when it is supplemented by a measure of occupational level. Results also indicate that Holland's theory and future tests of it should take more account of level differences among occupations and specify more clearly the particular domains of job characteristics to which they do and do not apply.

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The Construct Validity of Holland's Occupational Classification in Terms of Prestige, Census, Department of Labor, and Other Classification Systems

A variety of systems have been developed for describing and classifying jobs (Dunnette, 1976; McCormick, 1976). Some are scales which measure particular types of job characteristics such as work activities (e.g. degree of involvement with people), requirements (e.g. general educational development level), and reinforcers (e.g. opportunities for advancement). Others are global characterizations of work environments, such as those of Holland (1973) and the Census Bureau (1971), which are designed to group occupations according to their similarities on a number of dimensions. This report compares six schemes for describing occupations in order to (a) provide evidence about the construct validity of Holland's (1973) typology of work environments, and (b) estimate the amount of information shared by some commonly-used occupational classification systems.

Holland's typology of people and jobs has been widely used in research on vocational interests and career development and in vocational counseling. The meaning of the categories <u>for describing people</u> in terms of their vocational interests, competencies, and values has been established in large part by comparing Holland's personality assessment devices (the Self-Directed Search and the Vocational Preference Inventory) to other assessments of interests, temperaments, values, and abilities including the Strong Vocational Interest Blank, the General Aptitude Test Battery, the Armed Forces Vocational Aptitude Battery, Kuder's interest inventories, the Adjective Check List, the California Personality Inventory, and other devices (Breme &

Cockriel, 1975; Campbell, 1971; Cole, 1973; Holland, 1968, 1973, 1977; Holland & Nafziger, 1975; Kelso, Holland, & Gottfredson, 1977; Nafziger & Helms, 1972; Wakefield & Cunningham, 1975; Westbrook, 1975).

Understanding the meaning of the categories for describing occupations requires analogous comparisons of Holland's typology with other major classifications of occupations, but few such comparisons have been made. Viernstein (1972) provides evidence that Holland's six major categories of work require different levels of involvement with data, people, and things (U.S. Department of Labor, 1965). Holland, Viernstein, Kuo, Karweit, and Blum (1972) compared five categories of work and found mean differences in Position Analysis Questionnaire (McCormick, Jeanneret, & Mecham, 1972) factor scores. Both Toenjes and Borgen (1974) and Rounds, Shubsachs, Dawis, and Lofquist (1978) -- using essentially the same data on occupational reinforcer patterns -- found that Holland's categories differ systematically in the reinforcers they provide, but they produced contradictory evidence for Holland's hexagonal ordering of the categories. Large differences in income and educational requirements among the categories have also been demonstrated (L. Gottfredson, 1977).

This research provides a more thorough documentation of the meaning of the occupational types by comparing Holland's typology to five other systems for describing occupations: (a) occupational prestige (Temme, 1975), (b) activities and requirements presented in the Dictionary of Occupational Titles (U.S. Department of Labor, 1965) -- involvement with data, people, and things, general educational development (GED) level, and specific vocational preparation (SVP),

(c) self-direction (Kohn, 1969), (d) the 12 major census categories -- professional, managerial, sales, etc. (U.S. Bureau of the Census, 1971), and (e) the occupational reinforcer patterns developed in conjunction with the Minnesota Theory of Work Adjustment (Lofquist & Dawis, 1969). These systems were chosen because they tap different domains of job characteristics (work activities, requirements, or rewards), they are widely used in either research or applied settings, or they provide scores for many if not all of the several hundred detailed occupational titles used by the U.S. Census Bureau.

Holland's environmental formulations (summarized in Table 1) suggest several specific hypotheses but are silent about other possible differences such as those related to level of work. Table 2 lists hypotheses about the relations of specified job characteristics to both level and Holland category of work. The hypotheses about differences among the Holland categories are suggested by Holland's environmental formulations and finding evidence against them would question the construct validity of the formulations. Such hypotheses include the prediction that social and enterprising work have high levels of involvement with people and low levels of involvement with things, but the opposite being true of realistic work. Other job characteristics appear to distinguish primarily among different levels of work and would not necessarily be expected to distinguish among different Holland types of work at the same level -- for example, feelings of accomplishment, making decisions on one's own, and general educational development level required. Other job characteristics -- such as self-direction and level of compensation -- could be expected to vary

by both type and level of work. Finally, no predictions were made for other characteristics of work such as working alone, work not being morally wrong, and being busy all the time.

Insert Tables 1 and 2 About Here

Method

Holland codes, broad Census categories, and scores for prestige, self-direction, and DOT characteristics were assigned to the 437 detailed occupational titles used by the Census Bureau in 1970 to classify all jobs. Occupational reinforcer pattern scores were available for only 148 occupational titles, representing 120 of the 437 detailed census titles. The classifications and sources of data on job characteristics are described briefly below.

Classifications

Holland's Typology. Holland's (1973) classification is one of several that have been developed for the study of vocational interests. It is perhaps the most widely used classification scheme in vocational counseling and research, but it has seldom been used for other purposes. The scheme classifies occupations according to their resemblance to six ideal (theoretical) types of work: realistic (R), investigative (I), artistic (A), social (S), enterprising (E), and conventional (C). These categories represent different work environments and are assumed to summarize major distinctions in work activities and rewards among occupations. Table 1 provides a short description of the occupational types. Although data on actual job characteristics were used to derive Holland

codes for some occupations, the codes are based primarily on the vocational interests of workers in the different occupations. The codes for the detailed census occupational titles and the procedures used to get those codes are described by Gottfredson and Brown (1978).

Prestige. Occupational status or prestige has been the major dimension along which occupations have been classified in sociology because of that discipline's traditional emphasis on understanding the sources and consequences of socioeconomic inequality. Several highly correlated scales of occupational prestige or socioeconomic status (Duncan, 1961; Temme, 1975; Treiman, 1977) have been developed for research on occupational attainment. These scales are all based on ratings by the general public of the general desirability of particular occupations, and the scales can be considered measures of the general level of rewards provided by an occupation. The scale used here and its derivation are described in detail by Temme (1975). Prestige scores for each of the 437 detailed census titles were provided by Temme on machine-readable cards.

For some of the analyses, occupations are grouped into 3 broad levels: low (prestige 0-39), moderate (40-59), and high (60 and over). Occupations classified as low level in this study range from dishwasher, peddler, and hospital attendant to carpenter, hairdresser, and sales clerk. Occupations classified as moderate level include most skilled trades, managers, technicians, nurses, and clerical workers. High level work includes most professionals (such as lawyers, physicians, and architects), scientists, college professors, and engineers.

Dictionary of Occupational Titles (DOT). The U.S. Employment

Service has developed the Dictionary of Occupational Titles (U.S. Department of Labor, 1965) over the last four decades for the classification and placement of job seekers. The DOT characterizes over 20,000 job titles according to work activities, job requirements, and worker traits. General educational development (GED) level, specific vocational preparation (SVP), and level of involvement with data, people, and things are examined in this study. GED refers to education which contributes to a person's reasoning development and ability to follow instructions and which provides tool knowledges such as language and mathematical skills. SVP refers to the amount of time required to learn the techniques, acquire information, and develop the facility needed for average performance in a specific job. GED is generally obtained from elementary schools, secondary schools, and colleges whereas SVP is obtained primarily through vocational education, apprenticeships, and on-the-job training. Scale values for all five DOT variables are provided in Table 3. These definitions should be kept in mind when examining the results, because the actual definitions differ considerably from the meanings that many readers might otherwise attach to those variables. Temme's (1975) estimates for the detailed census titles are used in this study and were supplied by him on machine-readable cards.

Self-Direction. Self-direction is an index of the ability of workers in a specific job to determine how they will spend their time on that job. In the little research that has employed this measure, self-direction has been conceived as an occupational reward, but it could easily be considered as an occupational requirement. This measure was originally developed by Kohn (1969) from ratings of closeness of super-

Insert Table 3 About Here

vision, routinization of work, and substantive complexity. Scores on self-direction for the 437 census titles have been estimated by Temme (1975) and were provided by him on machine-readable cards.

Broad Census Categories. The Bureau of the Census (1971) groups its several hundred detailed occupational titles into 12 broad categories (shown in Table 7). There are no general principles defining the composition of the categories, and they appear to be an uncertain mixture of type and level of work. The scheme was originally designed to be a scale of socioeconomic status and it is frequently used for that purpose. Nevertheless, some of the categories appear to distinguish primarily between different work activities (e.g. sales versus clerical workers), so the categories are sometimes used as nominal categories to describe job content rather than job level. Although the categories have long been criticized for their ad hoc nature (Parnes, 1954; Caplow, 1954), they constitute perhaps the most widely-used classification of occupations in the United States. Variants of the census classification have been used in research on occupational mobility (e.g. Blau & Duncan, 1969), but its greatest use has been for organizing the vast amount of data collected by the U.S. government on employment and the socioeconomic status of different social groups.

Occupational Reinforcer Patterns. The Minnesota Work Adjustment Project (Borgen et al., 1968, 1972; Rosen et al., 1972) has developed measures of 21 reinforcer characteristics of work environments (shown in Table 9) and has published the ratings for 148 occupations. The Census Bureau's Alphabetical Index of Industries and Occupations (1971) was used in this study to assign the 148 occupations to detailed census

titles, the 148 titles eventually being distributed to 120 of the possible 437 categories. Two judges assigned the occupations to census categories and the investigator resolved the 14 cases where the assignments differed (3 of which involved differences in Holland codes). The 148 titles were then assigned the Holland code and the prestige level for the detailed census titles to which they had been assigned.

The occupational reinforcer pattern scores are ratings of the relative prominence of different rewards in an occupation and are designed to be used with assessments of the vocational needs of prospective workers in order to help them choose satisfying occupations. Occupational reinforcer patterns in the 148 occupations were obtained by asking supervisors and workers in these jobs to rank 21 reinforcers according to how well they described the jobs. Proportions reflecting the average rank of each reinforcer within an occupation were converted to unit normal deviate (z) scores, and these scores are referred to as the unadjusted scores of the occupation. These unadjusted scores provide a profile of which reinforcers are most and least distinctive <u>within</u> an occupation. Interoccupational comparisons using unadjusted scores are limited to statements such as "elementary school teachers say that security is a more prominent reinforcer than is compensation in their profession, whereas the opposite is true for real estate salesmen." The unadjusted scores do not show which occupation provides the higher level of either compensation or security.

The Work Adjustment Project has attempted to provide scores which allow interoccupational comparisons of the absolute level of reinforcers. These are referred to as adjusted scores. Although the Project advocates

the use of the adjusted rather than the unadjusted scores, a closer examination of the method of producing the adjusted scores reveals that they allow no such comparisons. The procedure for producing both the unadjusted and the adjusted scores is described below together with some examples which illustrate that the adjusted scores can be misleading.

Unadjusted scores were derived in an identical but separate procedure for each occupation. The proportions of raters (say elementary school teachers) who rated each reinforcer (say compensation) as more descriptive of their job than each other reinforcer (security, fairness of company policies, etc.) were obtained from a paired comparison procedure. The proportions (20 for each reinforcer) were averaged for each reinforcer and then transformed to normal deviate scores. These transformed scores constitute the unadjusted scores. The raters were then asked to say whether each reinforcer was present or not present in the occupation. The average proportion of the 21 reinforcers judged not to be present in the occupation was converted to a normal deviate score and became the "neutral point". Reinforcers with unadjusted scores above this point are judged to be present in the job and those below are judged to be absent. To create the adjusted scores, the neutral point for each occupation (e.g. -.869 for elementary teacher and -.674 for teacher aide) was added to all the unadjusted scores within that occupation. For example, -.869 was added to the unadjusted scores of .03 (working conditions), -.75 (compensation), and .83 (try out own ideas) to provide adjusted scores of .90, .12, and 1.70 for the occupation of elementary teacher. For teacher aide, the scores for the same three reinforcers were adjusted from .53, -.42, and -.04 to 1.21, .26, and .63.

This adjustment in no way provides absolute scores, nor scores which are comparable across occupations. There was nothing in common across the assessments by which to create a common scale (Angoff, 1971). For example, raters were not asked to compare levels of reinforcement for the same reinforcer in different occupations nor were they apparently asked to rate more than one occupation. The example cited above provides a concrete illustration of the failure to create comparable absolute scores. Although it is plausible that elementary teachers have more freedom to try out their own ideas than do teacher aides (adjusted scores of 1.70 and .63 respectively), it is not plausible that teacher aides have better absolute working conditions and compensation than do the teachers (respectively, .90 and .12 for teachers and 1.21 and .26 for aides). It is plausible, though, to conclude from the unadjusted scores that relative to the other reinforcers on the job compensation and working conditions are more important in teacher aide jobs than in elementary teaching jobs.

All analyses were performed with both the adjusted and the unadjusted scores, but because the unadjusted scores are more interpretable only the results with those scores are discussed. Results with adjusted scores are included in one table to provide a comparison with analogous results for the unadjusted scores and a comparison with studies which rely on adjusted scores. Other results for adjusted scores are shown in Appendix Tables A-2 to A-6.

Analyses

The 437 occupational titles were classified according to four different schemes -- prestige level, the 12 broad census categories,

Holland's 6-category typology, and a type-by-level scheme (incorporating both Holland categories and several prestige levels). The number of titles falling into each of the categories of the latter three schemes was examined to ascertain (a) the heterogeneity of the broad census categories according to Holland codes and (b) the relation between level and Holland type of work. The ability of the four different classifications to predict variance in DOT work activities, DOT training requirements, and self-direction was then compared. The proportion of variance in each job characteristic predicted was obtained for the prestige scale by squaring the correlation coefficient of prestige with those individual characteristics and for the three nominal classifications by using omega-squared (Hays, 1973) from analyses of variance. In an additional analysis the ability of three of the schemes (prestige, the 6-category typology, and the type-by-level scheme) to predict variance in the reinforcer pattern scores for the smaller group of 148 occupations was examined. The object of these analyses was to see if the type-by-level scheme summarizes job differences substantially better than does the simpler 6-category scheme and to see how many and which job characteristics it summarizes better than the prestige or the census category schemes. These analyses provide evidence of the relative discriminant validity of the schemes and about the dimensions along which they distinguish jobs.

Holland's formulations predict, however, that not only to the types differ significantly but they also differ in a particular pattern. Therefore, mean differences in DOT characteristics and reinforcer pattern scores across the 17 type-by-level categories were examined. Standard deviations are shown in Appendix Tables A-1, A-4, and A-6 for readers

interested in assessing the overlap between individual categories according to the various job characteristics.

Tests of significance are calculated only for the analyses with the occupational reinforcer patterns -- that is, in the analyses where only 120 of the complete set of 437 occupational categories are represented.

Results

Holland's typology is examined first in relation to prestige and then successively with each of the other systems for describing or classifying occupations.

Prestige

Table 4 shows that the six Holland types of work differ in the levels of work that they provide. The mean prestige of occupational titles varies from a low of 35 for realistic work to a high of 58 for investigative work (on a scale of 0 to 88). GED is more commonly used than prestige in vocational counseling as a measure of occupational level, so mean GED is also presented for each category of work. GED produces the same ordering of the types as does prestige, but this is not surprising because the two measures of occupational level correlate .95 (using occupation as the unit of analysis). The lower two panels of Table 4 show the distribution of occupational titles and of the number of jobs (i.e. the number of workers) in each type of work at three broad levels of work in 1970. These panels indicate that realistic work is primarily low-level work and conversely that most low-level work is realistic. In contrast, investigative work is primarily high-level work, though the greatest number of high-level jobs is provided by social occupations. Because important job characteristics such as pay and authority are

clearly related to level of work, these results suggest that occupational level should be taken into account when the Holland typology is used to describe occupations. Accordingly, many of the analyses to follow group occupations into three levels within each of the six categories of work, as was done in the lower panels of Table 4. (This results in a 17- and not an 18-category classification because there are no low-level investigative occupations.)

Insert Table 4 About Here

Dictionary of Occupational Titles and Self-Direction

Table 5 presents the correlations among prestige, self-direction, and the job activities and requirements assessed in the DOT. Prestige, GED, SVP, and self-direction are all highly correlated and reflect level of work. GED and occupational prestige appear to be the same variable ($r = .95$), indicating that raters probably do not distinguish between the level of rewards and the level of education required and instead perceive a general level hierarchy among occupations. The correlations indicate that raters also associate autonomy (self-direction), abstractness of work (involvement with data), and level of specific training necessary (SVP) with this hierarchy. The job activities of involvement with people and involvement with things are less highly correlated with level of work, the former being positively and the latter negatively correlated with prestige. These correlations among DOT characteristics and prestige are comparable to those found by Broom, Jones, Jones, and McDonnell (1977).

Insert Table 5 About Here

Holland's typology implies that the six work environments differ in work activities and that, for example, social and enterprising occupations have particularly high involvement with people. As already noted, Viernstein (1972) has found such differences. However, the foregoing analysis suggests that the occupational types may differ in job activities only to the extent that they differ in prestige level, and that a more convincing test of the validity of the formulations is to compare occupations of equal prestige. Table 6 presents such a comparison by showing mean DOT scores for three levels of occupations within each Holland category.

Table 6 reveals systematic differences by both type and level of work for involvement with data, people, and things. Involvement with data increases with occupational level in all types of work and is quite high in all types of high-level work compared to involvement with either people or things. (Note that a low score indicates high involvement.) Examining all three levels (where there are more than 5 cases), artistic work has the highest involvement with data and realistic and conventional have the least involvement with data. Involvement with people increases with level in all types of work except realistic, where it is absent regardless of level. Involvement with people is highest in social and enterprising work and lowest in realistic work. In contrast, involvement with things is absent in social, enterprising, and conventional work but increases from moderate to high levels with increasing prestige level in realistic work. Involvement with things decreases from moderate levels as prestige increases in investigative and artistic work but it is still present to some extent in high-level work in these two categories.

Insert Table 6 About Here

With only one exception, GED, SVP, and self-direction increase with level in all types of work, which is not surprising given their high correlations with prestige. Only self-direction shows substantial variation by type of work. It is highest in social and enterprising work and lowest in realistic work. The greater the involvement with both data and people and the less involvement with things, the more discretion workers appear to have in jobs of comparable prestige.

Hypotheses about differences among the Holland types were generally supported. GED and involvement with people and things varied (or did not vary) as predicted. There were differences among the types in self-direction and involvement with data, though not as predicted for self-direction. The differences in these two characteristics are related primarily to level rather than to type of work as indicated both by their high correlations with prestige (.85 and .80) and by the large mean differences being primarily between levels rather than between the types of work. Involvement with data, involvement with people (except in realistic work), GED, and self-direction all increased with level as predicted. Level of involvement with things increased with prestige level in realistic work, but -- contrary to prediction -- decreased in the two other categories (I and A) that had any involvement with things at any level.

In sum, the results (a) support the two most important hypotheses (differences among the types in people and things), (b) provide new information about the types, such as that levels of involvement with

people and things vary systematically within as well as between the types, (c) that some job characteristics are related primarily to level rather than type of work, so that although the types differ on the average in general training requirements (GED and SVP) these differences essentially disappear when occupations of similar prestige level are compared, and (d) the six categories are not all well distinguished by self-direction and the DOT characteristics analyzed here, for example the means for social and enterprising occupations being generally the same and conventional occupations not appearing distinctive in any way.

Broad Census Categories

Table 7 shows the number of occupational titles of each Holland category and the mean prestige for each broad census category. The two groups of operatives are similar to each other, as are the two laborer categories; otherwise the census categories differ from one another in either level or type of work. The table suggests, however, that some categories represent distinctive types of work whereas others represent specific levels but heterogeneous types of work. Four of the census categories are primarily realistic categories, two are largely enterprising, and one is mostly conventional. The other categories -- particularly the professional category -- are more heterogeneous mixtures of Holland categories. A number of distinctions in level are available in the census categories for realistic work, but investigative work is classified almost entirely into a single category.

Insert Table 7 About Here

Table 8 shows how classifications by type and level compare to the census categories in their ability to account for differences in the DOT and self-direction characteristics. Five occupational groupings are compared in this table: the prestige scale, the 12 census categories, the 6 Holland categories, and a 15- and 17-category type-by-level grouping. The 15-category grouping was created by grouping artistic occupations with the investigative ones and was used in order to have a type-by-level classification with a number of categories more comparable to the 12 found in the census scheme. Although the proportions of variance are listed for 7 variables, there are really only 3 comparisons with which to assess relative discriminant validity -- people, things, and level. As Table 5 showed, GED, data, prestige, SVP, and self-direction are highly correlated and appear to represent a general level factor. Table 8 shows that the prestige scale predicted from .6 to .9 of the variance in the level variables -- data, SVP, self-direction, and GED. Prestige predicted almost none of the variance in involvement with things. The 12 census categories distinguish level to about the same degree as does the prestige scale, but they distinguish levels of involvement with people and especially with things better than does the latter scale. When Holland's six categories are used instead of either the prestige or census schemes to summarize job differences, the proportion of variance in job characteristics predicted is lower -- primarily for the prestige-related DOT characteristics. The six categories, however, summarize distinctions in the job activities of working with people and things to about the same extent as does the census scheme and to a greater degree than does the prestige scale. The proportions of variance increase,

however, when the Holland type-by-level schemes are used. With two exceptions (SVP and involvement with things), the proportions of variance predicted are as high or higher than those for the census scheme. The census scheme makes more distinctions among (i.e. has more categories for) realistic occupations -- where distinctions in things and SVP also appear to be most important -- than do the type-by-level groupings, thus probably explaining the census scheme's greater ability to account for variance in these two characteristics.

Insert Table 8 About Here

Occupational Reinforcers

Table 9 shows the proportion of variance in each of 21 occupational reinforcers which is predicted by the prestige scale, by Holland's 6 categories, and by the 17 Holland type-by-level categories. Although results are presented for both adjusted and unadjusted reinforcer scores, this discussion will focus on the unadjusted scores because those results are more readily interpretable. Although Rounds et al. (1978) included more occupations in their study (using unpublished reinforcer scores) and although both Rounds et al. and Toenjes and Borgen (1974) probably coded Holland types somewhat differently, their results appear comparable to the results presented here because the omegas-squared for the adjusted scores using the 6-category typology are largely the same in all three studies. (The more detailed technical report [Rounds, et al., 1977, Note 1] contains the omegas-squared in the Rounds et al. study.)

The 17 categories predict at least one-third of the variance in

the rankings of 8 reinforcers. Comparisons of the proportions of variance associated with the 17 type-by-level categories to that associated with prestige level only or with the 6 Holland categories only show that the relative importance of 7 of these 8 reinforcers varies by both type and level. In contrast, dealing with people ("do things for people") is associated almost entirely with type rather than level of work.

Insert Table 9 About Here

Table 9 showed that the relative importance of reinforcers within an occupation generally depends both on the type and level of work. Table 10 examines such variation in more detail for those 10 reinforcers where the proportion of variance in unadjusted scores accounted for by either prestige, the 6 categories, or the 17 categories is at least, respectively, .2, .2, or .3. This table shows the mean scores for the 17 type-by-level categories for those 10 reinforcers. (Means, standard deviations, and correlations among all reinforcers for both adjusted and unadjusted scores are shown in Appendix Tables A-2 to A-6.) The number of occupations within each of these groups is generally small, but the table shows some interesting patterns. Results are much the same for five of the reinforcers -- try out own ideas, use individual abilities, make own decisions, get feeling of accomplishment, and plan work with little supervision -- because they are highly correlated with each other (.7 to .9). With few exceptions, these 5 reinforcers are ranked as more prominent reinforcers in the higher-level than lower-level jobs in all Holland categories of work. The relative prominence of these reinforcers varies somewhat across type of work as well, but

the differences are not striking. Concentrating on moderate-level work (where the N is at least 5 in all categories), "planning work with little supervision" and 'make decisions on own" appear to be somewhat more prominent reinforcers in artistic, social, and enterprising work. This result is consistent with the higher degree of self-direction Table 6 showed to be available in these types of work. The three other reinforcers -- use individual abilities, try out own ideas, and get a feeling of accomplishment -- are generally most dominant in artistic work and least dominant in conventional work.

Insert Table 10 About Here

The ranking of three additional reinforcers -- bosses train their men well, bosses back up their men, and company administers policies fairly -- are also highly correlated with each other (.7 to .9). Whereas the first five reinforcers are more dominant reinforcers among high-level jobs, these latter three reinforcers appear to be ranked higher in low-level jobs and are generally ranked quite low in high-level work. There is a slight tendency for these to be ranked higher in realistic and conventional work and lower in artistic work. The results for this and the foregoing set of variables are consistent because the two sets of variables are negatively correlated. "Try out own ideas," for example, is ranked high and "bosses train their men well" is ranked low in artistic work compared to other categories of work, but the opposite is true for conventional work. These results also make sense in terms of Holland's predictions about the six types: structured work is characteristic of conventional work but creativity is character-

istic of artistic work.

"Do things for other people" is clearly most prominent in social jobs and least prominent in realistic work at all levels, though it is more prominent at lower levels than higher levels in both types of work. The results for this reinforcer present a somewhat different pattern than was found for the DOT characteristic of involvement with people (Table 6) but this is not surprising because (a) the reinforcer scores are ipsative and the DOT scores are not and (b) it is not clear that these two variables measure the same characteristic. Involvement with people refers both to helping people and to manipulating people (the former being characteristic of social jobs and the latter of enterprising jobs) and the results showed it high for both social and enterprising jobs. In contrast, raters in the Work Adjustment Project may have interpreted "do things for others" primarily as helping activities and therefore rated social but not enterprising work especially high on this reinforcer.

"Paid well relative to other workers" is not rated highly as a reinforcer in any category. Its rank as a reinforcer appears to increase with prestige level in investigative and enterprising work but decrease with level in the other four categories of work. Pay is ranked highest as a reinforcer in enterprising work and lowest in social and artistic work. This result is consistent with pay differences which have been found in other research: when years of education and prestige level are held constant, pay is highest in enterprising work and lowest in social (L. Gottfredson, 1977).

Results were generally as predicted for the reinforcers discussed above. The hypotheses about the relation of the Holland types to "try out own ideas," "do things for people," and "paid well relative to other workers" are supported. Five of the six characteristics hypothesized to increase with level did so. Contrary to prediction, being paid well relative to other workers decreased in relative importance as prestige level increased. Another four reinforcers -- company administers policies fairly, bosses back up their men, bosses train their men well, and do things for other people -- were negatively related to prestige level, none of those relations having been predicted. The few predictions made for the other reinforcers are not discussed here because all but two of them failed to have significant omega's and the two that were significant did not show any consistent pattern of differences.

Adjusted scores produce results systematically different from those of unadjusted scores. In some cases they lead to the same conclusions about variations in reinforcement by type and level of work. For example, the conclusions about the first five reinforcers discussed -- try out own ideas, use individual abilities, make own decisions, get feeling of accomplishment, and plan work with little supervision -- are substantially the same. In other cases, the adjusted scores seem to be misleading. For example, the adjusted scores suggest that on the average workers have the same compensation in the three different broad levels of prestige.

The variation in results can be better understood by noting that some of the unadjusted reinforcer items are highly correlated (some positively and some negatively) with prestige level and the neutral

point itself is correlated .5 with prestige. When the neutral point is added to the unadjusted scores for each occupation to create the adjusted scores, differences among occupations at the different prestige levels increase for those reinforcers positively correlated with prestige and decrease for those reinforcers negatively correlated with prestige. This result is reflected in Table 9 by the larger omegas-squared among adjusted scores for the items most positively correlated with prestige (try out own ideas, use individual abilities, make decisions on own, feeling of accomplishment, and plan work with little supervision) and by the smaller omegas-squared for the items most negatively correlated to prestige (company administers policies fairly, bosses back up their men, and bosses train their men well).

Results of multivariate procedures such as multidimensional scaling and discriminant analysis should also vary systematically depending on which set of reinforcer scores are used. Correlations among reinforcer items are all more positive among the adjusted than among the unadjusted scores (because a different constant--the neutral point--has been added to the scores of each occupation). Although the rank order of the signed correlations is much the same for the two sets of scores (correlations are shown in Gottfredson, Note 1), the rank order of the covariances is quite different suggesting that somewhat different dimensions or reinforcers would be found important with the two sets of scores. Multivariate analyses using correlations among occupations (rather than among items) should produce a more prominent prestige level dimension using adjusted rather than unadjusted scores because of the incorporation of the neutral point--which is correlated with prestige--within the adjusted scores.

Discussion

This study provides the most comprehensive evidence to date on the construct validity of Holland's occupational typology, but several limitations should be kept in mind. First, only a fraction of available job characteristics data has been included in this study. Job analyses and other data for specific occupations or for small sets of occupations have not been included. Instead an effort was made to focus on the most comprehensive and most widely-used systems for describing and classifying job characteristics in several domains -- activities, general training requirements, and rewards. Therefore, analyses are restricted primarily to data which are available for all occupations, in particular, for the several hundred detailed occupational titles used by the U. S. Census Bureau to classify jobs.

Second, the classifications against which Holland's scheme has been compared are of differing and uncertain validity. The occupational prestige scale is perhaps the most extensively and systematically assessed of the schemes. There is evidence not only of the validity of such scales for measuring socioeconomic rewards, but also of their stability over time and social groups (Hope, 1972; Hauser & Featherman, 1977). In contrast, little research has been done with the recently-developed occupational reinforcer patterns and even less is known about the self-direction scale. Several sets of data were used here for this reason, but yet others would be desirable.

With these limitations in mind the following conclusions can be drawn from the results.

(1) The evidence supports the construct validity of Holland's

occupational scheme. Two types of evidence are provided. First, the scheme predicts variance not only in work activities (on which Holland's theory focuses) but also in job requirements and rewards (about which the theory has as yet little to say). The results also show that a scheme which incorporates broad level distinctions into the typology predicts variance in job characteristics better than the 6-category typology and at least as well as two other widely-used occupational classifications (the broad census categories and a prestige scale). The second type of evidence is that specific predictions suggested by the environmental formulations are supported. Predictions about relations to the types were not made for all the job characteristics, but 5 of the 6 hypotheses made were supported.

As a general-purpose occupational classification, the typology is clearly more useful when supplemented by several distinctions in job level and it is superior to the census scheme in some ways. First, the type-by-level scheme used here is more flexible than the census scheme because it could easily include more than the three distinctions in level within each type of work used in this study. Second, unlike the census categories, both Holland's scheme and the prestige scale with which it was supplemented are readily interpretable because they are embedded within theories and research on vocational behavior and occupational structure. Incorporating level distinctions into Holland's scheme has the additional virtue of relating Holland's typology and associated vocational interest research to the extensive theory and research on occupational attainment using prestige scales.

(2) It is misleading to ignore differences in occupational level.

With few exceptions (G. Gottfredson, 1977; Gottfredson, Holland & Gottfredson, 1975), differences in job level have generally been ignored in tests of Holland's typology of people and jobs. Failing to take account of job level probably is not a serious omission in some work on vocational interests because many practical applications related to counseling of advanced high school or college populations whose aspirations tend to be high. But when the entire range of jobs in an economy is considered, characteristics associated with job level (such as authority and pay) but not necessarily with functional type of work, become important descriptors of job environments. Differences among the types in authority and responsibility (e.g., try out own ideas, make own decisions), abstractness of work (involvement with data), autonomy (self-direction), and other job characteristics related primarily to job level are exaggerated when differences in level among the types of work are not controlled. Differences among the types in other characteristics, such as specific vocational preparation (SVP), disappear when prestige level is controlled.

Previous tests of Holland's constructs, such as those using occupational reinforcer patterns data (Rounds et al., 1978; Toenjes and Borgen, 1974), should therefore be reevaluated. The occupational reinforcer items--both adjusted and unadjusted--clearly distinguish among occupations at different levels. Six of the 21 reinforcers are correlated at least .5 with prestige level. Rosen et al. (1972) note that when they clustered occupations according to reinforcer scores, the clusters formed a hierarchy. In addition, when the correlations of the reinforcers with the first discriminant function in Toenjes and Borgen's discriminant

analysis are examined, the correlations appear much the same as do the correlations of the items with prestige level (the correlation between the two sets of correlations being .8). This suggests that their first function discriminating among the six types largely reflects the average prestige differences among the Holland types that were shown in Table 4.

(3) Greater specificity of constructs is needed. Holland's theoretical predictions as well as future tests of them should more clearly specify the domains of job characteristics to which they apply--e.g. job activities performed, worker traits required, values and interests fostered, socioeconomic rewards available, or working conditions--than has been the case in the past. For example, neither the failure nor the ability of data on working conditions to reproduce Holland's hexagon would say much if anything about the validity of the hexagon for describing similarities in work content, though previous evaluations of the construct (both favorable and unfavorable) have implied that it would. Holland's occupational types are global characterizations which are more applicable to some types of occupational differences (e.g. worker traits required and job activities performed) than to others (e.g. work products or job context). Although the typology is clearly useful for a variety of purposes, it would be helpful to have more information about where it is more and less useful.

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Table 1

Description of Holland's Occupational Types

Occupational Environment	Sample Occupations
Realistic	
Fosters technical competencies and achievements, and manipulation of objects, machines, or animals; rewards the display of such values as money, power, and possessions. Encourages people to see the world in simple, tangible, and traditional terms.	Mechanical engineer Plumber Auto mechanic Fork lift operator
Investigative	
Fosters scientific competencies and achievements, and observation and systematic investigation of phenomena; rewards the display of scientific values. Encourages people to see the world in complex, abstract, independent, and original ways.	Physicist Weather observer Laboratory assistant
Artistic	
Fosters artistic competencies and achievements, and ambiguous, free or unsystematized work; rewards display	Editor Decorator

Table 1 -- continued

Occupational Environment	Sample Occupations
of artistic values. Encourages people to see the world in complex, independent, unconventional, and flexible ways.	Garment designer Fashion model
Social	
Fosters interpersonal competencies, and informing, training, curing, or enlightening others; rewards the display of social or humanitarian values. Encourages people to see the world in flexible ways.	Minister Elementary teacher Physical therapist Ward attendant
Enterprising	
Fosters persuasive and leadership compentencies or achievements, and the manipulation of others for personal or organizational goals; rewards the display of enterprising values and goals such as money, power, and status. Encourages people to see the world in terms of power, status, responsibility, and in stereotyped and simple terms.	Lawyer Contractor Automobile dealer Salesperson

Table 1 -- continued

Occupational Environment	Sample Occupations
Conventional	
Fosters conformity and clerical competencies, and explicit manipulation of data, records, or written material; rewards the display of such values as money, dependability, conformity. Encourages people to see the world in conventional, stereotyped, constricted, simple, and dependent ways.	Certified public accountant Secretary Timekeeper Clerk

Table 2

Hypotheses about Relation of Job Characteristics to Type and Level of Work

Variable	Relation of variable to: Prestige level (within Holland types)	Holland type (within prestige levels)
DOT Characteristics		
Involvement with people	+	S, E - hi; R - lo
Involvement with things	+	R - hi; S, E - lo
Involvement with data	+	
Specific vocational preparation (SVP)		
General educational development level (GED)	+	No differences
Self-direction	+	A, I - hi; C - lo
Reinforcer Patterns		
Try out own ideas	+	A - hi; C - lo
Company administers policies fairly		
Use individual abilities	+	
Do things for people		S - hi
Bosses back up their men		
Make decisions on own	+	
Feeling of accomplishment	+	
Bosses train their men well		

Table 2 -- continued

Variable	Prestige level (within Holland types)	Holland type (within prestige levels)
Reinforcer Patterns Cont.		
Tell other workers what to do	+	
Plan work with little supervision	+	
Paid well relative to other workers	+	E - hi; S - lo
Opportunities for advancement		E - hi
Busy all the time		
Friendly co-workers		S - hi
Position of "somebody" in the community	+	
Receive recognition for work	+	
Have steady employment		CSR - hi
Good working conditions		
Work not morally wrong		
Work is different every day		A - hi; C - lo
Work alone		

Note: Blanks indicate that no predictions were made.

Table 3

Scale Values for Selected Dictionary of Occupational Titles (DOT) Job Characteristics

Data	People	Things
0 Synthesizing	0 Mentoring	0 Setting-up
1 Coordinating	1 Negotiating	1 Precision Working
2 Analyzing	2 Instructing	2 Operating
3 Compiling	3 Supervising	3 Driving-Operating
4 Computing	4 Diverting	4 Manipulating
5 Copying	5 Persuading	5 Tending
6 Comparing	6 Speaking-Signalling	6 Feeding-Offbearing
7 No significant relationship	7 Serving	7 Handling
8 No significant relationship	8 No significant relationship	8 No significant relationship

General Educational Development (Reasoning Development)[a]

6 Apply principles of logical or scientific thinking to a wide range of intellectual and practical problems. Deal with non-verbal symbolism (formulas, scientific equations, graphs, musical notes, etc.) in its most difficult phases. Deal with a variety of abstract and concrete variables. Apprehend the most abstruse classes of concepts.

5 Apply principles of logical or scientific thinking to define problems, collect data, establish facts, and draw valid conclusions. Interpret an extensive variety of technical instructions, in books, manuals, and mathematical or diagrammatic form. Deal with several abstract and concrete variables.

4 Apply principles of rational systems to solve practical problems and deal with a variety of concrete variables in situations where only limited standardization exists. Interpret a variety of instructions furnished in written, oral, diagrammatic, or schedule form.

3 Apply common sense understanding to carry out instructions furnished in written, oral, or diagrammatic form. Deal with problems involving several concrete variables in or from standardized situations.

Table 3 -- Continued

2 Apply common sense understanding to carry out detailed but uninvolved written or oral instructions. Deal with problems involving a few concrete variables in or from standardized situations.

1 Apply common sense understanding to carry out simple one- or two-step instructions. Deal with standardized situations with occasional or no variables in or from these situations encountered on the job.

Specific Vocational Preparation	
9	Over 10 years
8	Over 4 years up to and including 10 years
7	Over 2 years up to and including 4 years
6	Over 1 year up to and including 2 years
5	Over 6 months up to and including 1 year
4	Over 3 months up to and including 6 months
3	Over 30 days up to and including 3 months
2	Anything beyond short demonstrations up to and including 30 days
1	Short demonstration only

Source: U.S. Department of Labor (1965).

[a]GED is defined in the DOT by describing reasoning, mathematical, and language development required at the six levels, but only the former is shown in this table.

Table 4

Prestige and General Educational Development (GED) Level of Occupations in the Six Holland Categories

	Holland Type of Work					
	Real	Inv	Art	Soc	Ent	Conv
Mean Level of Occupational Titles:						
GED	3.1	5.3	4.7	4.5	4.3	3.5
Prestige	35	58	52	51	45	44
Number of Detailed Census Occupational Titles at Three Prestige Levels:[a]						
Low	151	0	2	19	13	18
Moderate	41	10	10	24	48	13
High	3	41	6	24	12	2
Number (thousands) of Jobs[b] **in 1970 at Three Prestige Levels:**						
Low	28,512	0	22	2,804	3,966	6,060
Moderate	5,701	804	613	2,563	6,118	5,873
High	197	2,232	372	3,440	2,206	725

[a]Low = 0-39; moderate = 40-59; high = 60+ on Temme's (1975) prestige scale.

[b]Does not include supplementary jobs held by workers employed in two or more jobs.

Table 5

Correlations Among Selected Occupational Characteristics

(N = 437)

	People	Things	SVP	Self-direction	GED	Prestige	Mean	Standard deviation
Data	.48	-.16	.81	.84	.85	.80	3.4	2.2
People		-.57	.46	.80	.61	.58	6.3	2.1
Things			.09	-.52	-.19	-.20	5.5	2.6
SVP				.74	.86	.84	5.7	1.7
Self-direction					.90	.85	11.6	7.3
GED						.95	3.9	1.1
Prestige							43.0	16.8

Note: A high score on data, people, or things indicates low involvement, so the signs of the correlations of these three variables with the other four variables have been reversed to aid interpretation.

Table 6

Mean Score of Occupations on Self-Direction and Selected Characteristics from the Dictionary of Occupational Titles: By Prestige Level and Holland Type of Work

	Type of Work						
Prestige	Real	Inv	Art	Soc	Ent	Conv	Total
Involvement with Data[a]							
Lo	5.6	---	(1.4)	4.8	3.0	4.4	5.2
Mod	2.8	2.4	1.2	2.1	1.7	3.2	2.2
Hi	(0.1)	1.0	0.8	1.6	1.3	(1.7)	1.2
Total	4.9	1.3	1.1	2.7	1.9	3.8	3.4
Involvement with People[a]							
Lo	7.7	---	(8.0)	6.1	5.6	7.3	7.4
Mod	7.4	7.4	5.9	4.9	5.3	7.0	6.2
Hi	(7.8)	5.1	5.3	2.4	3.3	(4.8)	4.2
Total	7.6	5.5	5.9	4.4	5.1	7.1	6.3
Involvement with Things[a]							
Lo	4.1	---	(1.0)	7.6	7.3	6.5	4.8
Mod	2.9	3.6	4.8	7.7	7.5	7.8	5.8
Hi	(1.7)	5.8	6.8	8.0	7.5	(8.0)	6.6
Total	3.8	5.3	5.0	7.7	7.5	7.1	5.5

Table 6 -- continued

Prestige	Type of Work						
	Real	Inv	Art	Soc	Ent	Conv	Total
Specific Vocational Preparation (SVP)							
Lo	4.4	---	(7.4)	4.1	4.9	3.6	4.4
Mod	6.7	6.2	6.8	6.5	6.6	5.1	6.5
Hi	(7.9)	7.6	7.6	7.4	7.6	(7.6)	7.5
Total	4.9	7.3	7.2	6.1	6.4	4.4	5.7
Self-Direction							
Lo	4.0	---	(10.0)	11.3	13.0	8.5	5.7
Mod	10.1	11.8	15.2	17.8	17.0	13.5	14.4
Hi	(15.0)	19.6	20.5	22.8	21.7	(20.8)	20.7
Total	5.4	18.0	16.4	17.7	17.1	11.2	11.6
General Educational Development (GED) Level							
Lo	2.8	---	(4.0)	3.3	3.4	3.0	2.9
Mod	4.0	4.3	4.4	4.5	4.3	3.8	4.2
Hi	(5.4)	5.6	5.5	5.4	5.3	(5.4)	5.5
Total	3.1	5.3	4.7	4.5	4.3	3.5	3.9

Note: Parentheses indicate $N \leq 5$.

[a] A high score on data, people, or things indicates low involvement.

Table 7

Prestige Level and Holland Type of Work

in the Broad Census Categories

Census Category	Mean Prestige of Titles	Number of Occupational Titles					
		Real	Inv	Art	Soc	Ent	Conv
Professional, technical	62	15	49	13	36	8	2
Managerial	51	2	--	--	9	46	1
Sales	40	--	--	1	--	12	--
Clerical	38	6	1	--	4	3	29
Crafts	38	73	1	4	--	--	--
Operatives, except transport	28	49	--	--	--	--	1
Transport operatives	28	10	--	--	--	1	--
Laborers, except farm	18	14	--	--	--	--	--
Farmers and farm managers	35	1	--	--	--	1	--
Farm laborers	20	4	--	--	--	--	--
Service	26	18	--	--	16	2	--
Household	11	3	--	--	2	--	--

Table 8

Proportion of Variance in Selected Occupational Characteristics Accounted for By Different Groupings of Occupations

Occupational Characteristics	Prestige[a]	12 Census Categories	6 Holland Categories	15 Categories of Holland Type and Level	17 Categories of Holland Type and Level
Data	.64	.70	.44	.67	.67
People	.34	.40	.40	.54	.55
Things	.04	.55	.42	.47	.47
SVP	.70	.70	.29	.60	.60
Self-Direction	.72	.76	.62	.81	.81
GED	.90	.74	.52	.82	.82
Prestige	---	.74	.48	.83	.83

[a]Scale from 0-88.

Table 9

Proportion of Variance in Occupational Reinforcers Accounted for by Holland's Categories and Prestige Level: Unadjusted and Adjusted Scores

Occupational Reinforcers[b]	Prestige Level		Holland's 6 Categories		17 Categories of Holland Type and Prestige Level (F ratio)			
	Unadj.	Adj.	Unadj.	Adj.	Unadj.		Adj.	
Try out own ideas	.26	.32	.29	.29	.45	(6.2) **	.47	(6.8) **
Company administers policies fairly	.31[a]	.08[a]	.23	.17	.40	(5.2) **	.23	(2.3) *
Use individual abilities	.26	.34	.22	.22	.40	(5.2) **	.43	(5.8) **
Do things for other people	.01	.08	.35	.41	.39	(4.8) **	.46	(6.5) **
Bosses back up their men	.30[a]	.04[a]	.21	.10	.39	(4.8) **	.14	(1.3)
Make decisions on own	.30	.36	.17	.20	.37	(4.5) **	.43	(5.7) **
Feeling of accomplishment	.22	.37	.24	.26	.36	(4.3) **	.44	(6.1) **
Bosses train their men well	.28[a]	.06[a]	.17	.09	.34	(4.0) **	.14	(1.2)
Tell other workers what to do	.02	.15	.07	.07	.28	(2.9) **	.33	(3.7) **
Plan work with little supervision	.20	.36	.07	.16	.25	(2.6) *	.40	(5.1) **
Paid well relative to other workers	.04[a]	.00	.21	.16	.25	(2.6) *	.20	(1.9)
Opportunities for advancement	.03	.14	.16	.13	.24	(2.4) *	.28	(3.0) **
Busy all the time	.07[a]	.00	.11	.02	.23	(2.3) *	.11	(0.9)
Friendly co-workers	.16[a]	.01[a]	.11	.10	.22	(2.1)	.18	(1.7)
Position of "somebody" in the community	.09	.26	.08	.18	.22	(2.1)	.38	(4.7) **
Receive recognition for work	.02[a]	.06	.10	.15	.21	(2.1)	.19	(1.8)

Table 9 -- continued

Occupational Reinforcers	Prestige Level		Holland's 6 Categories		17 Categories of Holland Type and Prestige Level (F ratio)			
	Unadj.	Adj.	Unadj.	Adj.	Unadj.		Adj.	
Have steady employment	.05[a]	.00[a]	.07	.03	.21	(2.0)	.16	(1.5)
Good working conditions	.06[a]	.01	.06	.07	.18	(1.7)	.15	(1.4)
Work not morally wrong	.07[a]	.02	.05	.14	.16	(1.4)	.24	(2.5)
Work is different every day	.00	.09	.09	.11	.14	(1.2)	.22	(2.2)
Work alone	.04[a]	.00	.05	.04	.12	(1.1)	.10	(0.8)

[a]The correlation with prestige was negative.

*$P \leq .01$.

**$P \leq .001$.

[b]The abbreviations of the reinforcer titles suggested by the Work Adjustment Project (Borgen, et al., 1968) do not adequately convey the content of the items. Both Rounds et al. (1978) and Toenjes and Borgen (1974) use those abbreviations, however, so they are listed as follows (in the same order as listed in this table): creativity, company policies and practices, ability utilization, social service, supervision-human relations, responsibility, achievement, supervision-technical, authority, autonomy, compensation, advancement, activity, co-workers, social status, recognition, security, working conditions, moral values, variety, and independence.

Table 10

Mean Unadjusted Scores on 10 Occupational Reinforcers:

Occupations Grouped by Prestige Level and Holland Type of Work

Prestige	Real	Inv	Art	Soc	Ent	Conv	Total
Try out own ideas							
Lo	-.18	---	---	-.18	.10	-.54	-.20
Mod	-.07	-.17	.51	.21	.12	-.40	-.02
Hi	(.64)	.07	(.70)	.46	(.45)	(.20)	.30
Total	-.13	-.02	.54	.18	.16	-.38	-.06
Plan work with little supervision							
Lo	-.06	---	---	-.21	.02	-.12	-.07
Mod	-.03	.03	.14	.22	.23	.11	.07
Hi	(.53)	.23	(.09)	.34	(.31)	(.36)	.29
Total	-.04	.15	.13	.13	.13	.04	.04
Use individual abilities							
Lo	.40	---	---	.30	.56	.06	.36
Mod	.52	.43	.94	.69	.60	.25	.54
Hi	(.95)	.61	(1.01)	.83	(.76)	(.81)	.76
Total	.45	.54	.95	.62	.60	.24	.49
Make decisions on own							
Lo	-.12	---	---	-.09	.11	-.37	-.13
Mod	.09	.01	.30	.23	.42	-.08	.12
Hi	(.59)	.33	(.38)	.48	(.42)	(.33)	.40
Total	-.04	.21	.31	.22	.26	-.16	.04
Feeling of accomplishment							
Lo	.39	---	---	.43	.31	.24	.36
Mod	.48	.57	.78	.74	.56	.24	.52
Hi	(.60)	.62	(.91)	.57	(.48)	(.64)	.60
Total	.42	.60	.80	.59	.42	.29	.46

Table 10 -- continued

Prestige	Real	Inv	Art	Soc	Ent	Conv	Total
Bosses train their men well							
Lo	.10	---	---	.03	.04	.13	.10
Mod	-.05	-.04	-.24	-.32	-.23	-.02	-.12
Hi	(-.35)	-.31	(-.29)	-.48	(-.24)	(-.30)	-.36
Total	.05	-.21	-.24	-.28	-.09	.01	-.05
Bosses back up their men							
Lo	.17	---	---	.04	.08	.06	.13
Mod	-.07	-.06	-.32	-.20	-.16	.02	-.11
Hi	(-.21)	-.30	(-.36)	-.23	(-.10)	(-.14)	-.23
Total	.08	-.20	-.32	-.14	-.03	.02	-.01
Company administers policies fairly							
Lo	.30	---	---	.11	.23	.21	.26
Mod	.01	-.12	-.17	-.12	-.03	.17	-.02
Hi	(-.23)	-.32	(-.33)	-.10	(.01)	(-.18)	-.20
Total	.19	-.24	-.19	-.05	.12	.14	.09
Do things for other people							
Lo	.01	---	---	.94	.04	.56	.17
Mod	-.01	.25	.06	.91	.48	.27	.23
Hi	(-.26)	.18	(.27)	.80	(.07)	(.36)	.38
Total	-.10	.21	.09	.88	.19	.42	.22
Paid well relative to other workers							
Lo	.15	---	---	-.39	-.01	-.06	.06
Mod	.03	-.07	-.11	-.44	.13	-.17	-.08
Hi	(-.13)	.07	(-.71)	-.51	(.24)	(-.22)	-.18
Total	.11	.02	-.20	-.45	.07	-.13	-.03
Number of Occupational Titles							
Lo	46	0	0	6	8	10	70
Mod	24	5	6	7	5	9	56
Hi	1	8	1	7	2	3	22
Total	71	13	7	20	15	22	148

Note: Parentheses indicate N < 5.

Appendix

Table A-1

Standard Deviation Scores of Occupations on Self-Direction and Selected Characteristics from the Dictionary of Occupational Titles: By Prestige and Holland Type of Work

	Type of Work						
Prestige	Real	Inv	Art	Soc	Ent	Conv	Total
Involvement with Data							
Lo	1.6	--	a	2.0	1.5	1.3	1.8
Mod	1.3	0.8	1.1	0.9	1.0	1.2	1.2
Hi	a	0.7	0.7	0.5	0.3	a	0.6
Total	2.0	0.9	1.0	1.8	1.2	1.4	2.2
Involvement with People							
Lo	0.6	--	a	1.0	0.8	0.8	0.9
Mod	1.3	0.7	1.5	2.1	0.9	0.9	1.7
Hi	a	3.0	2.5	1.5	2.1	a	2.8
Total	0.8	2.9	1.9	2.2	1.4	1.2	2.1
Involvement with Things							
Lo	2.2	--	a	1.4	0.9	2.1	2.5
Mod	2.3	2.6	3.1	0.6	0.7	0.4	2.7
Hi	a	2.8	2.6	0.1	0.8	a	2.4
Total	2.3	2.9	3.2	0.8	0.7	1.7	2.6

Table A-1 -- Continued

Prestige	Type of Work						
	Real	Inv	Art	Soc	Ent	Conv	Total
Specific Vocational Preparation (SVP)							
Lo	1.5	--	a	1.1	1.5	0.7	1.5
Mod	0.6	0.5	0.5	0.8	0.9	1.1	0.9
Hi	a	0.5	0.4	0.6	0.4	a	0.5
Total	1.7	0.7	0.6	1.6	1.2	1.4	1.7
Self-Direction							
Lo	3.2	--	a	3.3	2.6	3.5	4.4
Mod	3.2	3.1	4.3	3.8	2.6	3.0	4.4
Hi	a	4.1	3.0	1.6	2.9	a	3.6
Total	4.2	5.0	4.9	5.5	3.7	4.8	7.3
General Educational Development (GED) Level							
Lo	0.6	--	a	0.4	0.4	0.4	0.6
Mod	0 3	0.4	0.5	0.6	0.4	0.5	0.5
Hi	a	0.4	0.3	0.5	0.4	a	0.4
Total	0.8	0.6	0.7	1.0	0.7	0.8	1.1

[a] $N \leq 5$.

Table A-2

Correlations Among Prestige and Occupational Reinforcer Patterns Item Scores: Adjusted Scores Above the Diagonal and Unadjusted Scores Below the Diagonal [a]

	Neutral Point[b]	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	Prestige
Neutral Point	--	.78	.72	.19	.51	.40	.17	.27	-.19	.74	.28	.15	.68	.78	.27	.30	.57	.30	.16	.61	.30	.65	.50
1. Use abilities	.50	--	.85	.08	.38	.38	-.11	.22	-.36	.92	.31	.03	.65	.84	-.20	.18	.48	.05	-.11	.67	.03	.70	.58
2. Accomplishment	.24	.67	--	.06	.35	.39	-.13	.22	-.26	.76	.12	.12	.66	.70	-.19	.29	.58	.01	-.07	.59	.06	.57	.61
3. Busy	-.43	-.30	-.20	--	-.01	.22	.09	.04	-.06	.07	.08	-.07	.10	.04	.00	-.12	-.09	.07	.07	.13	.00	.08	.05
4. Opportunities	.07	.02	-.01	-.14	--	.33	.14	.23	-.16	.30	-.03	-.07	.56	.34	.20	-.01	.32	.32	.39	.15	.31	.28	.38
5. Tell others	-.13	.03	.12	.20	.15	--	-.12	.07	-.11	.39	-.17	-.08	.22	.45	-.14	-.01	.26	.05	-.06	.29	-.11	.43	.39
6. Fair policies	-.47	-.53	-.42	.25	.03	-.12	--	.33	-.02	-.14	.03	.09	.34	-.15	.10	-.16	.01	.84	.61	-.11	.27	-.11	-.28
7. Paid well	-.18	-.08	-.01	.07	.10	-.01	.35	--	-.29	.04	.06	-.24	.37	.08	-.18	-.40	.21	.32	.30	.07	.15	.05	.04
8. Co-workers	-.81	-.58	-.30	.33	-.10	.09	.39	.00	--	-.35	-.21	.33	-.30	-.24	.16	.34	.03	-.07	-.02	-.16	.07	-.16	-.09
9. Own ideas	.49	.85	.53	-.29	-.08	.08	-.53	-.29	-.56	--	.33	-.07	.55	.87	-.18	.24	.44	.01	-.21	.66	.00	.75	.57
10. Work alone	-.24	.01	-.18	.13	-.22	-.28	.10	.03	.09	.04	--	.05	.13	.42	.15	.12	.16	.00	-.08	.21	.25	.45	.06
11. Work not immoral	-.66	-.42	-.15	.22	-.18	-.03	.36	-.10	.70	-.36	.16	--	-.01	.14	.06	.49	.32	-.03	-.10	.07	-.01	.14	.16
12. Recognition	-.27	.21	.31	-.03	.34	-.07	.29	.27	-.12	.07	-.09	-.10	--	.45	-.10	.05	.41	.48	.35	.40	.30	.34	.24
13. Own decisions	.53	.71	.40	-.35	-.04	.14	-.38	-.27	-.50	.78	.14	-.33	-.17	--	-.09	.34	.54	.01	-.16	.65	.00	.88	.60
14. Steady work	-.37	-.48	-.36	.15	.17	-.11	.26	-.11	.39	-.42	.23	.29	-.14	-.34	--	.10	.06	.12	.21	-.18	.47	-.01	-.03
15. Things for others	-.06	-.12	.09	-.15	-.20	-.14	-.17	-.51	.30	-.01	.46	.39	-.23	.11	.11	--	.37	-.15	-.22	.25	.11	.39	.29
16. Be somebody	.04	.09	.31	-.24	.05	.04	-.11	.07	.07	.06	-.01	.18	.04	.18	.03	.25	--	.04	-.07	.36	.22	.44	.51
17. Bosses back up	-.45	-.46	-.38	.20	.14	-.02	.87	.31	.35	-.47	.02	.25	.36	-.52	.26	-.22	-.17	--	.72	-.02	.20	.01	-.20
18. Bosses train	-.47	-.53	-.35	.24	.28	-.06	.69	.32	.39	-.61	.00	.23	.31	-.60	.35	-.22	-.20	.77	--	-.24	.35	-.27	-.25
19. Work differs	.15	.41	.30	-.04	-.22	.05	-.30	-.14	-.15	.41	.01	-.12	-.03	.38	-.29	.08	.04	-.30	-.45	--	-.19	.55	.30
20. Working conditions	-.39	-.47	-.30	.11	.14	-.19	.38	.13	.39	-.47	.25	.22	.13	-.51	.56	.04	.04	.28	.45	-.51	--	.02	.10
21. Supervision	.20	.44	.23	-.14	-.07	.21	-.36	-.22	-.19	.55	.30	-.10	-.19	.75	-.11	.25	.11	-.33	-.52	.26	-.30	--	.60
Prestige	.50	.51	.47	-.26	.18	.14	-.56	-.19	-.40	.51	-.20	-.27	-.16	.55	-.23	.12	.30	-.55	-.53	.07	-.25	.45	--

[a] Note that the patterns of correlations are much the same for both the adjusted and the unadjusted scores. Adding the neutral point to create the adjusted scores raises (or makes less negative) all correlations from what they were among the unadjusted reinforcer scores.

[b] Signs for correlations with the neutral point have been reversed for ease of interpretation. The lower the neutral point is, the greater the number of reinforcers judged present in the occupation and the more the "unadjusted" scores are adjusted upward to create the "adjusted" scores.

[c] Reinforcer titles have been abbreviated in this table. See Table A-3 for the complete titles.

Table A-3

Mean Unadjusted Occupational Reinforcer Pattern Item Scores:
By Prestige Level and Holland Type of Work

Prestige	Real	Inv	Art	Soc	Ent	Conv	Total
Use individual abilities							
Lo	.40	--	--	.30	.56	.06	.36
Mod	.52	.43	.94	.69	.60	.25	.54
Hi	(.95)	.61	(1.01)	.83	(.76)	(.81)	.76
Total	.45	.54	.95	.62	.60	.24	.49
Feeling of accomplishment							
Lo	.39	--	--	.43	.31	.24	.36
Mod	.48	.57	.78	.74	.56	.24	.52
Hi	(.60)	.62	(.91)	.57	(.48)	(.64)	.60
Total	.42	.60	.80	.59	.42	.29	.46
Busy all the time							
Lo	.21	--	--	-.02	-.03	.39	.19
Mod	.02	.15	-.11	-.01	-.08	.13	.02
Hi	(-.21)	-.06	(-.05)	.09	(-.49)	(-.04)	-.05
Total	.14	.02	-.10	.02	-.11	.23	.09
Opportunities for advancement							
Lo	-.14	--	--	-.50	-.06	.06	-.13
Mod	.02	-.10	-.08	-.41	-.10	.15	-.04
Hi	(.26)	.25	(.25)	-.25	(.28)	(.24)	.10
Total	-.08	.12	-.03	-.38	-.03	.12	-.07
Tell other workers what to do							
Lo	-.86	--	--	-1.05	-1.12	-1.00	-.92
Mod	-.87	-.89	-.92	-.52	-.97	-.99	-.86
Hi	(-.10)	-.53	(-.43)	-1.21	(-.96)	(-.58)	-.77
Total	-.85	-.67	-.85	-.92	-1.05	-.94	-.88
Company administers policies fairly							
Lo	.30	--	--	.11	.23	.21	.26
Mod	.01	-.12	-.17	-.12	-.03	.17	-.02
Hi	(-.23)	-.32	(-.33)	-.10	(.01)	(-.18)	-.20
Total	.19	-.24	-.19	.05	.12	.14	.09

Table A-3 -- Continued

Prestige	Real	Inv	Art	Soc	Ent	Conv	Total
Paid well relative to other workers							
Lo	.15	--	--	-.39	-.01	-.06	.06
Mod	.03	-.07	-.11	-.44	.13	-.17	-.08
Hi	(-.13)	.07	(-.71)	-.51	(.24)	(-.22)	-.18
Total	.11	.02	-.20	-.45	.07	-.13	-.03
Friendly co-workers							
Lo	.19	--	--	.31	.04	.34	.20
Mod	.10	.13	-.14	.11	-.04	.21	.08
Hi	(-.15)	-.07	(-.05)	-.03	(-.26)	(-.09)	-.07
Total	.15	.07	-.12	.13	-.03	.22	.12
Try out own ideas							
Lo	-.18	--	--	-.18	.10	-.54	-.20
Mod	-.07	-.17	.51	.21	.12	-.40	-.02
Hi	(.64)	.07	(.70)	.46	(.45)	(.20)	.30
Total	-.13	-.02	.54	.18	.16	-.38	-.06
Work alone							
Lo	-.07	--	--	-.08	-.12	-.05	-.07
Mod	-.12	-.10	.03	-.47	-.30	.03	-.14
Hi	(-.53)	-.36	(-.29)	-.18	(-.09)	(-.30)	-.28
Total	-.09	-.26	-.01	-.25	-.18	-.05	-.13
Work not morally wrong							
Lo	.10	--	--	.24	-.08	.16	.10
Mod	-.06	.08	-.14	.05	-.01	.08	-.01
Hi	(-.11)	-.09	(.10)	.08	(.04)	(-.16)	-.02
Total	.04	-.02	-.11	.12	-.04	.08	.04
Receive recognition for work							
Lo	.24	--	--	.14	.27	.14	.22
Mod	.07	.16	.32	.08	.21	.15	.12
Hi	(.22)	.12	(.18)	-.07	(.36)	(.20)	.12
Total	.18	.13	.30	.04	.26	.16	.17
Make decisions on own							
Lo	-.12	--	--	-.09	.11	-.37	-.13
Mod	.09	.01	.30	.23	.42	-.08	.12
Hi	(.59)	.33	(.38)	.48	(.42)	(.33)	.40
Total	-.04	.21	.31	.22	.26	-.16	.04

Table A-3 -- Continued

Prestige	Real	Inv	Art	Soc	Ent	Conv	Total
Have steady employment							
Lo	.52	--	--	.68	.59	.72	.57
Mod	.76	.61	.18	.56	.12	.76	.60
Hi	(.12)	.48	(-.30)	.19	(-.08)	(.08)	.23
Total	.60	.53	.11	.47	.34	.65	.53
Do things for other people							
Lo	.01	--	--	.94	.04	.56	.17
Mod	-.01	.25	.06	.91	.48	.27	.23
Hi	(-.26)	.18	(.27)	.80	(.07)	(.36)	.38
Total	-.10	.21	.09	.88	.19	.42	.22
Position of "somebody" in the community							
Lo	-.69	--	--	-.51	-.71	-.73	-.68
Mod	-.58	-.65	-.71	-.52	-.26	-.74	-.59
Hi	(-.77)	-.28	(-.16)	-.52	(-.37)	(-.47)	-.41
Total	-.65	-.42	-.63	-.52	-.52	-.70	-.61
Bosses back up their men							
Lo	.17	--	--	.04	.08	.06	.13
Mod	-.07	-.06	-.32	-.20	-.16	.02	-.11
Hi	(-.21)	-.30	(-.36)	-.23	(-.10)	(-.14)	-.23
Total	.08	-.20	-.32	-.14	-.03	.02	-.01
Bosses train their men well							
Lo	.10	--	--	.03	.04	.13	.10
Mod	-.05	-.04	-.24	-.32	-.23	-.02	-.12
Hi	(-.35)	-.31	(-.29)	-.48	(-.24)	(-.30)	-.36
Total	.05	-.21	-.24	-.28	-.09	.01	-.05
Work is different every day							
Lo	-.06	--	--	-.04	-.13	-.21	-.08
Mod	.05	-.02	.22	.05	-.05	-.19	.01
Hi	(.05)	-.24	(-.13)	.22	(-.08)	(-.13)	-.04
Total	-.02	-.15	.17	.08	-.09	-.19	-.04
Good working conditions							
Lo	.30	--	--	.37	.41	.44	.34
Mod	.34	.46	.27	.10	.12	.48	.31
Hi	(.01)	.29	(.12)	.07	(.01)	(.02)	.14
Total	.31	.36	.25	.17	.26	.40	.30

Table A-3 -- Continued

Prestige	Real	Inv	Art	Soc	Ent	Conv	Total
Plan work with little supervision							
Lo	-.06	--	--	-.21	.02	-.12	-.07
Mod	-.03	.03	.14	.22	.23	.11	.07
Hi	(.53)	.23	(.09)	.34	(.31)	(.36)	.29
Total	-.04	.15	.13	.13	.13	.04	.04

Table A-4

Standard Deviation of Unadjusted Reinforcer Pattern Item Scores: By Prestige Level and Holland Type of Work

Prestige	Real	Inv	Art	Soc	Ent	Conv	Total
Use individual abilities							
Lo	.28	--	--	.34	.26	.22	.30
Mod	.20	.34	.18	.28	.46	.25	.31
Hi	a	.35	a	.17	a	a	.26
Total	.27	.35	.16	.34	.32	.33	.33
Feeling of accomplishment							
Lo	.25	--	--	.32	.22	.12	.24
Mod	.14	.13	.09	.18	.32	.15	.23
Hi	a	.30	a	.08	a	a	.21
Total	.22	.24	.10	.23	.27	.19	.25
Busy all the time							
Lo	.33	--	--	.31	.39	.22	.34
Mod	.29	.21	.19	.23	.34	.23	.27
Hi	a	.31	a	.21	a	a	.28
Total	.33	.28	.18	.24	.37	.28	.32
Opportunities for advancement							
Lo	.35	--	--	.36	.27	.29	.35
Mod	.36	.38	.31	.22	.36	.12	.34
Hi	a	.37	a	.22	a	a	.44
Total	.36	.40	.31	.27	.31	.34	.37
Tell other workers what to do							
Lo	.28	--	--	.27	.26	.22	.28
Mod	.25	.14	.13	.41	.69	.32	.34
Hi	a	.38	a	.34	a	a	.48
Total	.28	.35	.22	.45	.45	.29	.34
Company administers policies fairly							
Lo	.31	--	--	.25	.19	.28	.29
Mod	.23	.11	.14	.12	.20	.19	.21
Hi	a	.28	a	.18	a	a	.22
Total	.31	.24	.14	.20	.22	.26	.31

Table A-4 -- Continued

Prestige	Real	Inv	Art	Soc	Ent	Conv	Total
Paid well relative to other workers							
Lo	.42	--	--	.26	.41	.41	.43
Mod	.34	.46	.38	.15	.31	.22	.35
Hi	a	.47	a	.34	a	a	.48
Total	.40	.45	.42	.25	.41	.32	.42
Friendly co-workers							
Lo	.30	--	--	.27	.15	.16	.27
Mod	.26	.23	.06	.18	.45	.24	.26
Hi	a	.30	a	.15	a	a	.21
Total	.28	.28	.06	.23	.29	.24	.28
Try out own ideas							
Lo	.33	--	--	.46	.14	.34	.35
Mod	.24	.25	.17	.42	.45	.30	.38
Hi	a	.51	a	.28	a	a	.41
Total	.31	.43	.17	.45	.30	.36	.41
Work alone							
Lo	.42	--	--	.28	.31	.16	.37
Mod	.43	.24	.23	.28	.41	.15	.37
Hi	a	.44	a	.19	a	a	.32
Total	.42	.39	.25	.29	.32	.21	.36
Work not morally wrong							
Lo	.29	--	--	.22	.09	.16	.26
Mod	.21	.32	.27	.23	.15	.23	.23
Hi	a	.21	a	.15	a	a	.18
Total	.27	.26	.26	.21	.12	.21	.25
Receive recognition for work							
Lo	.20	--	--	.22	.17	.13	.19
Mod	.20	.21	.11	.18	.14	.12	.19
Hi	a	.24	a	.09	a	a	.20
Total	.21	.22	.12	.17	.15	.13	.20
Make decisions on own							
Lo	.35	--	--	.53	.22	.28	.36
Mod	.19	.12	.19	.36	.26	.47	.30
Hi	a	.27	a	.26	a	a	.23
Total	.33	.27	.17	.44	.26	.42	.37

Table A-4 -- Continued

Prestige	Real	Inv	Art	Soc	Ent	Conv	Total
Have steady employment							
Lo	.61	--	--	.32	.27	.31	.52
Mod	.38	.45	.36	.39	.29	.36	.43
Hi	a	.30	a	.21	a	a	.31
Total	.55	.36	.37	.37	.38	.38	.48
Do things for other people							
Lo	.50	--	--	.42	.25	.44	.55
Mod	.32	.52	.30	.24	.65	.30	.46
Hi	a	.45	a	.15	a	a	.43
Total	.44	.46	.28	.27	.45	.38	.50
Position of "somebody" in the community							
Lo	.28	--	--	.34	.14	.21	.27
Mod	.20	.14	.27	.18	.38	.27	.26
Hi	a	.47	a	.20	a	a	.37
Total	.26	.41	.32	.23	.36	.26	.29
Bosses back up their men							
Lo	.24	--	--	.14	.19	.20	.22
Mod	.26	.06	.10	.12	.17	.11	.21
Hi	a	.33	a	.08	a	a	.22
Total	.27	.28	.10	.16	.21	.17	.26
Bosses train their men well							
Lo	.28	--	--	.19	.17	.23	.25
Mod	.31	.07	.14	.21	.36	.16	.27
Hi	a	.39	a	.22	a	a	.28
Total	.30	.33	.13	.29	.27	.25	.31
Work is different every day							
Lo	.39	--	--	.24	.33	.41	.37
Mod	.19	.31	.34	.15	.25	.26	.25
Hi	a	.13	a	.19	a	a	.25
Total	.34	.23	.33	.21	.28	.32	.32
Good working conditions							
Lo	.33	--	--	.38	.13	.20	.30
Mod	.20	.17	.11	.19	.28	.23	.23
Hi	a	.25	a	.18	a	a	.25
Total	.29	.23	.12	.28	.25	.28	.28

Table A-4 -- Continued

Prestige	Real	Inv	Art	Soc	Ent	Conv	Total
Plan work with little supervision							
Lo	.33	--	--	.28	.13	.27	.30
Mod	.22	.13	.20	.29	.16	.27	.24
Hi	a	.28	a	.24	a	a	.25
Total	.30	.25	.18	.35	.19	.31	.30

[a] $N \leq 5$.

Table A-5

Mean Adjusted Occupational Reinforcer Pattern Item Scores:
By Prestige Level and Holland Type of Work

Prestige	Real	Inv	Art	Soc	Ent	Conv	Total
Use individual abilities							
Lo	.93	--	--	.86	1.26	.60	.92
Mod	1.20	1.10	1.70	1.41	1.48	.88	1.24
Hi	(1.69)	1.32	(1.86)	1.65	(1.67)	(1.57)	1.53
Total	1.03	1.24	1.72	1.33	1.39	.84	1.13
Feeling of accomplishment							
Lo	.92	--	--	.98	1.01	.78	.92
Mod	1.14	1.24	1.54	1.47	1.44	.87	1.22
Hi	(1.34)	1.33	(1.76)	1.39	(1.39)	(1.40)	1.38
Total	1.00	1.30	1.57	1.30	1.21	.90	1.10
Busy all the time							
Lo	.74	--	--	.54	.67	.93	.75
Mod	.69	.82	.65	.72	.80	.76	.72
Hi	(.54)	.65	(.80)	.92	(.42)	(.72)	.72
Total	.72	.71	.67	.73	.68	.83	.73
Opportunity for advancement							
Lo	.39	--	--	.06	.65	.60	.42
Mod	.69	.57	.68	.31	.78	.78	.66
Hi	(1.03)	.97	(1.10)	.57	(1.19)	(1.00)	.87
Total	.50	.81	.74	.33	.76	.73	.58
Tell other workers what to do							
Lo	-.32	--	--	-.49	-.42	-.46	-.37
Mod	-.20	-.22	-.17	.20	-.09	-.36	-.16
Hi	(.64)	.19	(.42)	-.39	(-.06)	(.18)	.01
Total	-.27	.03	-.08	-.21	-.26	-.33	-.23
Company administers policies fairly							
Lo	.83	--	--	.66	.94	.75	.82
Mod	.68	.55	.59	.60	.86	.80	.68
Hi	(.51)	.40	(.52)	.72	(.92)	(.58)	.58
Total	.77	.46	.58	.66	.91	.75	.73

Table A-5 -- Continued

Prestige	Real	Inv	Art	Soc	Ent	Conv	Total
Paid well relative to other workers							
Lo	.69	--	--	.17	.69	.48	.61
Mod	.70	.60	.65	.28	1.01	.46	.62
Hi	(.61)	.79	(.14)	.31	(1.14)	(.54)	.60
Total	.69	.71	.57	.26	.86	.48	.61
Friendly co-workers							
Lo	.72	--	--	.86	.74	.87	.76
Mod	.77	.80	.62	.84	.84	.84	.78
Hi	(.59)	.64	(.80)	.82	(.65)	(.67)	.71
Total	.73	.70	.65	.84	.77	.83	.76
Try out own ideas							
Lo	.35	--	--	.38	.81	.00	.35
Mod	.60	.50	1.27	.94	1.01	.23	.68
Hi	(1.38)	.78	(1.55)	1.28	(1.36)	(.96)	1.08
Total	.45	.67	1.31	.89	.95	.23	.59
Work alone							
Lo	.47	--	--	.47	.59	.49	.48
Mod	.55	.57	.79	.25	.58	.66	.56
Hi	(.21)	.35	(.56)	.64	(.82)	(.46)	.50
Total	.49	.43	.76	.46	.61	.56	.52
Work not morally wrong							
Lo	.63	--	--	.80	.63	.70	.65
Mod	.61	.75	.61	.78	.87	.72	.69
Hi	(.63)	.62	(.95)	.90	(.95)	(.60)	.75
Total	.63	.67	.66	.83	.75	.69	.68
Receive recognition for work							
Lo	.78	--	--	.70	.98	.68	.78
Mod	.74	.83	1.08	.73	1.09	.78	.82
Hi	(.96)	.83	(1.03)	.81	(1.27)	(.96)	.90
Total	.77	.83	1.07	.75	1.05	.76	.81
Make decisions on own							
Lo	.41	--	--	.46	.82	.17	.43
Mod	.76	.68	1.06	.96	1.30	.55	.82
Hi	(1.33)	1.04	(1.23)	1.30	(1.32)	(1.09)	1.18
Total	.54	.90	1.09	.93	1.05	.45	.69

Table A-5 -- Continued

Prestige	Real	Inv	Art	Soc	Ent	Conv	Total
Have steady employment							
Lo	1.06	--	--	1.24	1.30	1.26	1.13
Mod	1.43	1.28	.94	1.28	1.00	1.39	1.30
Hi	(.86)	1.19	(.55)	1.01	(.82)	(.84)	1.01
Total	1.18	1.23	.88	1.17	1.13	1.26	1.18
Do things for other people							
Lo	.54	--	--	1.50	.75	1.10	.73
Mod	.66	.92	.82	1.64	1.36	.90	.93
Hi	(.48)	.90	(1.12)	1.62	(.98)	(1.12)	1.15
Total	.58	.91	.86	1.59	.98	1.02	.87
Position of "somebody" in the community							
Lo	-.15	--	--	.04	.00	-.19	-.12
Mod	.09	.02	.05	.20	.62	-.11	.11
Hi	(-.03)	.43	(.69)	.30	(.54)	(.29)	.37
Total	-.07	.27	.14	.19	.28	-.09	.04
Bosses back up their men							
Lo	.70	--	--	.60	.78	.60	.69
Mod	.60	.61	.44	.53	.72	.65	.59
Hi	(.53)	.42	(.49)	.59	(.80)	(.62)	.54
Total	.66	.49	.45	.57	.76	.62	.63
Bosses train their men well							
Lo	.64	--	--	.58	.75	.67	.65
Mod	.62	.63	.52	.40	.65	.61	.58
Hi	(.39)	.40	(.56)	.34	(.66)	(.46)	.42
Total	.63	.49	.53	.43	.70	.61	.59
Work is different every day							
Lo	.48	--	--	.52	.58	.33	.47
Mod	.72	.65	.98	.77	.83	.44	.71
Hi	(.79)	.48	(.72)	1.04	(.83)	(.63)	.73
Total	.56	.54	.94	.79	.70	.42	.60
Good working conditions							
Lo	.84	--	--	.93	1.12	.97	.90
Mod	1.00	1.13	1.03	.83	1.01	1.11	1.01
Hi	(.75)	1.00	(.97)	.89	(.92)	(.78)	.92
Total	.89	1.05	1.02	.88	1.05	1.00	.94

Table A-5 -- Continued

Prestige	Real	Inv	Art	Soc	Ent	Conv	Total
Plan work with little supervision							
Lo	.48	--	--	.34	.72	.42	.48
Mod	.64	.70	.90	.94	1.11	.74	.77
Hi	(1.27)	.94	(.94)	1.16	(1.22)	(1.12)	1.07
Total	.54	.85	.90	.84	.92	.64	.68

Table A-6

Standard Deviation of Adjusted Occupational Reinforcer Pattern Item Scores: By Prestige Level and Holland Type of Work

Prestige	Real	Inv	Art	Soc	Ent	Conv	Total
Use individual abilities							
Lo	.37	--	--	.53	.36	.22	.40
Mod	.33	.45	.24	.32	.58	.41	.43
Hi	a	.37	a	.20	a	a	.31
Total	.38	.40	.23	.48	.44	.44	.46
Feeling of accomplishment							
Lo	.31	--	--	.36	.32	.11	.30
Mod	.23	.16	.13	.17	.45	.27	.32
Hi	a	.32	a	.11	a	a	.24
Total	.30	.27	.15	.30	.40	.29	.35
Busy all the time							
Lo	.32	--	--	.22	.39	.19	.31
Mod	.30	.21	.21	.24	.34	.22	.26
Hi	a	.37	a	.26	a	a	.31
Total	.31	.32	.20	.28	.36	.22	.29
Opportunity for advancement							
Lo	.34	--	--	.53	.33	.33	.38
Mod	.45	.40	.34	.31	.40	.21	.40
Hi	a	.31	a	.25	a	a	.45
Total	.41	.39	.35	.41	.37	.43	.43
Tell other workers what to do							
Lo	.27	--	--	.33	.25	.24	.27
Mod	.22	.16	.19	.49	.70	.40	.37
Hi	a	.38	a	.35	a	a	.46
Total	.28	.37	.28	.49	.47	.38	.37
Company administers policies fairly							
Lo	.25	--	--	.08	.15	.29	.24
Mod	.35	.17	.13	.12	.07	.27	.28
Hi	a	.31	a	.19	a	a	.28
Total	.29	.27	.12	.14	.12	.27	.27

Table A-6 -- Continued

Prestige	Real	Inv	Art	Soc	Ent	Conv	Total
Paid well relative to other workers							
Lo	.44	--	--	.34	.44	.39	.45
Mod	.37	.52	.42	.16	.26	.19	.38
Hi	a	.47	a	.34	a	a	.49
Total	.42	.48	.42	.28	.46	.31	.43
Friendly co-workers							
Lo	.15	--	--	.10	.08	.15	.15
Mod	.16	.21	.08	.18	.34	.10	.18
Hi	a	.21	a	.15	a	a	.18
Total	.15	.22	.10	.14	.20	.15	.17
Try out own ideas							
Lo	.42	--	--	.63	.25	.26	.45
Mod	.36	.36	.21	.46	.56	.45	.49
Hi	a	.56	a	.29	a	a	.45
Total	.42	.50	.22	.58	.40	.46	.52
Work alone							
Lo	.38	--	--	.38	.30	.15	.34
Mod	.47	.31	.19	.28	.50	27	.40
Hi	a	.53	a	.17	a	a	.37
Total	.41	.46	.20	.31	.35	.22	.37
Work not morally wrong							
Lo	.17	--	--	.13	.11	.16	.17
Mod	.13	.30	.25	.18	.13	.10	.18
Hi	a	.25	a	.12	a	a	.24
Total	.16	.27	.26	.15	.19	.14	.19
Receive recognition for work							
Lo	.25	--	--	.31	.25	.12	.25
Mod	.35	.30	.14	.19	.26	.19	.30
Hi	a	.28	a	.11	a	a	.25
Total	.28	.28	.13	.21	.25	.20	.27
Make decisions on own							
Lo	.42	--	--	.68	.29	.31	.44
Mod	.34	.20	.23	.42	.39	.64	.44
Hi	a	.34	a	.28	a	a	.29
Total	.43	.34	.22	.57	.39	.55	.50

Table A-6 -- Continued

Prestige	Real	Inv	Art	Soc	Ent	Conv	Total
Have steady employment							
Lo	.58	--	--	.22	.23	.34	.50
Mod	.38	.41	.36	.40	.24	.22	.38
Hi	a	.30	a	.22	a	a	.28
Total	.54	.33	.36	.31	.28	.32	.44
Do things for other people							
Lo	.44	--	--	.33	.30	.48	.52
Mod	.39	.46	.35	.24	.61	.27	.50
Hi	a	.56	a	.16	a	a	.50
Total	.42	.51	.34	.24	.49	.38	.53
Position of "somebody" in the community							
Lo	.25	--	--	.49	.19	.20	.27
Mod	.26	.08	.29	.12	.48	.32	.32
Hi	a	.53	a	.19	a	a	.41
Total	.27	.45	.36	.30	.47	.32	.36
Bosses back up their men							
Lo	.20	--	--	.16	.15	.21	.20
Mod	.38	.13	.12	.13	.09	.22	.28
Hi	a	.33	a	.09	a	a	.25
Total	.28	.28	.11	.13	.12	.22	.24
Bosses train their men well							
Lo	.26	--	--	.14	.09	.21	.23
Mod	.39	.14	.10	.14	.27	.21	.29
Hi	a	.35	a	.25	a	a	.30
Total	.30	.30	.09	.21	.17	.25	.27
Work is different every day							
Lo	.44	--	--	.32	.40	.43	.42
Mod	.25	.38	.32	.16	.36	.39	.32
Hi	a	.19	a	.21	a	a	.32
Total	.40	.28	.31	.31	.38	.41	.39
Good working conditions							
Lo	.30	--	--	.37	.11	.19	.29
Mod	.30	.14	.10	.22	.15	.14	.24
Hi	a	.27	a	.17	a	a	.22
Total	.31	.23	.09	.25	.15	.21	.27

Table A-6 -- Continued

Prestige	Real	Inv	Art	Soc	Ent	Conv	Total
Plan work with little supervision							
Lo	.33	--	--	.38	.17	.31	.32
Mod	.32	.13	.25	.37	.16	.44	.34
Hi	a	.35	a	.24	a	a	.27
Total	.34	.30	.23	.47	.27	.42	.39

[a] $N < 5$.